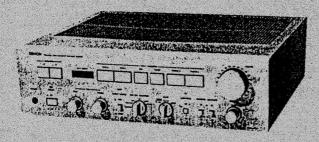
# DENON

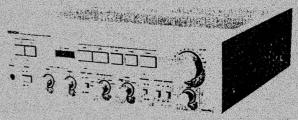
Hi-Fi Pre-Main Amplifier

# SERVICE MANUAL MODEL PMA-770/750

SOLID STATE
PRE MAIN AMPLIFIER



PMA-770



PMA-750

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NIPPON COLUMBIA CO., LTD.

#### **SPECIFICATIONS**

#### PMA-770

POWER AMPLIFIER SECTION

Circuit Type: Rated Output Power: All stage direct DC servo circuit

Both channel drive

20 Hz to 20 kHz 100 W + 100 W (DIN, U.K., EUROPE, U.S.A.)

1 kHz (4 ohm Load) 150 W + 150 W (DIN, U.K., U.S.A.)

1 kHz (4 ohm Load) 50 W + 50 W (IEC)

(Subject to change by temperature test) **Total Harmonic Distortion:** 

47 k ohm

0.008% (20 Hz - 20 kHz at -3 dB rated output 8 ohm Load) 0.02% (20 Hz - 20 kHz at rated output 8 ohm Load) (U.S.A.) Below 7 kHz / 60 Hz : 1/4 0.002% (at amplitude output

equivalent to rated output)

Output Band Width: 5 Hz - 100 kHz (IHF THD 0.035%)

1 Hz - 250 kHz +0 dB (at 1 W output) Transmission Characteristics: Input Sensitivity: 150 mV

Input Impedance: Output Impedance:

Intermodulation Distortion:

0.08 ohm (1 kHz)

Output Terminals:

Speaker: A and B Load 4 - 16 ohm A + B Load 8 - 16 ohm Headphone/Stereo headphone

**EQUALIZER AMPLIFIER SECTION** 

Equalizer Amplifier Output:

Maximum Output: 10 V (at 47 k ohm Load)

Rated Output: 150 mV

Total harmonic wave distortion: below 0.002%

(at 1 kHz, 8 V output)

Input Sensitivity/Input Impedance:

PHONO-1, 2 MM 2.5 mV MC 125 µV 100 ohm

TUNER 150 mV

47 k ohm AUX, TAPE 150 mV 47 k ohm

**RIAA Deviation:** PHONO-1,-2 MM within ±0.2 dB (20 Hz - 100 kHz) within ±0.2 dB (20 Hz - 100 kHz)

**OVERALL CHARACTERISTICS** SN Ratio (IHFA Network):

PHONO-1,-2 MM 90 dB (input terminals short-circuited

for 2.5 mV input)

MC 73 dB (input terminals short-circuited

for 250 uV input)

TUNER, TAPE, AUX:

110 dB (input terminals short-circuited)

Tone Control Adjustable Range:

100 Hz ±8 dB BASS TREBLE 10 kHz ±8 dB SUBSONIC 18 Hz, 6 dB/oct

Loudness Characteristics:

Low frequency 100 Hz + 7 dB High frequency 10 kHz + 6 dB

AC OUTLET:

SWITCHED x 2, 100 W (Total) UNSWITCHED x 1, 250 W

(For U.S.A. and Canada) POWER SOURCE:

Filtering Characteristics:

Germany and France AC 220 V, 50 Hz; U.K. AC 240 V, 50 Hz;

POWER CONSUMPTION:

U.S.A. AC 120 V, 60 Hz; Hong Kong AC 200V, 50 Hz 270 W (U.S.A.); 400 W (IEC); 290 W (Hong Kong);

DIMENSIONS:

800 W Maximum Output 434 mm (W) x 132 mm (H) x 407 mm (D)

(including rubber feet, control knobs, and terminals)

WEIGHT:

Design and specifications are subject to change without prior notice.

NOTE: The following code correspond to the appropriate models.

E2 for Enrope EF for France, EK for U.K., E3 for U.S.A., E3 for Canada and E1 for Hong Kong, Singapore. This Service Manual is prepared based on PMA-770 E2.

#### SPECIFICATIONS

#### PMA-750

POWER AMPLIFIER SECTION

Total Harmonic Distortion:

Circuit Type: Rated Output Power: All stage direct DC servo circuit

Both channel drive

20 Hz to 20 kHz 80 W + 80 W (DIN, U.K., EUROPE, U.S.A.) (8 ohm Load)

1 kHz (4 ohm Load) 100 W + 100 W (DIN, U.K., U.S.A.)

1 kHz (4 ohm Load) 50 W + 50 W (IEC)

(Subject to change by temperature test)

0.008% (20 Hz - 20 kHz at -3 dB rated output 8 ohm Load) 0.02% (20 Hz - 20 kHz at rated output 8 ohm Load) (U.S.A.) Below 7 kHz / 60 Hz : 1/4 0.002% (at amplitude output

Intermodulation Distortion: equivalent to rated output)

**Output Band Width:** 5 Hz - 100 kHz (IHF THD 0.035%)

Transmission Characteristics: Input Sensitivity:

1 Hz - 250 kHz +0 dB (at 1 W output) 150 mV 47 k ohm

Input Impedance: Output Impedance:

0.08 ohm (1 kHz) Speaker: A and B Load 4 - 16 ohm

A + B Load 8 - 16 ohm

Headphone/Stereo headphone

**EQUALIZER AMPLIFIER SECTION** 

Input Sensitivity/Input Impedance:

Equalizer Amplifier Output:

**Output Terminals:** 

Maximum Output: 10 V (at 47 k ohm Load)

Rated Output: 150 mV

Total harmonic wave distortion: below 0.002%

(at 1 kHz, 8 V output)

PHONO MM 2.5 mV 47 k ohm

MC 125 μV 100 ohm TUNER 150 mV 47 k ohm AUX, TAPE 150 mV 47 k ohm

**RIAA Deviation:** PHONO MM within ±0.2 dB (20 Hz - 100 kHz)

MC within ±0.2 dB (20 Hz - 100 kHz)

**OVERALL CHARACTERISTICS** 

SN Ratio (IHFA Network):

**PHONO** MM 88 dB (input terminals short-circuited

for 2.5 mV input)

MC 72 dB (input terminals short-circuited

for 250 µV input)

TUNER, TAPE, AUX:

110 dB (input terminals short-circuited)

Tone Control Adjustable Range:

BASS 100 Hz ±8 dB TREBLE 10 kHz ±8 dB Filtering Characteristics: SUBSONIC 18 Hz, 6 dB/oct Loudness Characteristics:

Low frequency 100 Hz + 7 dB High frequency 10 kHz + 6 dB

AC OUTLET:

POWER CONSUMPTION:

(For U.S.A. and Canada)

SWITCHED x 2, 100 W (Total) UNSWITCHED x 1, 250 W

POWER SOURCE: Germany and France AC 220 V, 50 Hz; U.K. AC 240 V, 50 Hz;

U.S.A. AC 120 V, 60 Hz; Hong Kong AC 200V, 50 Hz 230 W (U.S.A.); 400 W (IEC); 200 W (Hong Kong); 680 W Maximum Output

DIMENSIONS:

WEIGHT:

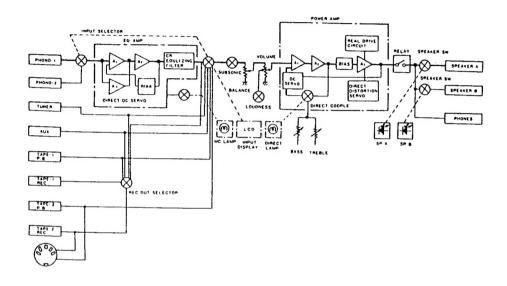
434 mm (W) x 132 mm (H) x 407 mm (D)

(including rubber feet, control knobs, and terminals)

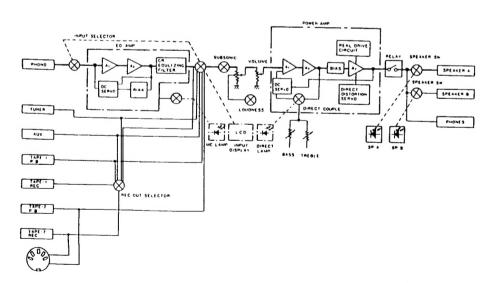
Design and specifications are subject to change without prior notice.

#### **BLOCK DIAGRAM**

#### PMA-770

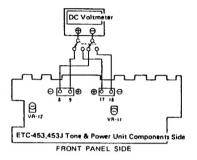


PMA-750



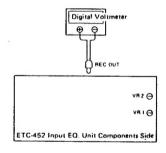
#### METHOD OF ADJUSTMENT

# Schematic View of Tone Power for ETC-453 (PMA-770), ETC-453J (PMA-750)

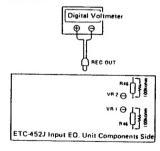


# Schematic View for Input and Equalizer for ETC-452 (PMA-770), ETC-452J (PMA-750)

#### PMA-770



#### PMA-750



### Adjustment of Idling Current (ETC-453, ETC-453J)

- Keep the unit away from direct wind blown by an air-conditioner and an electric fan. Keep the unit under normal conditions. Adjust the range of ambient temperature to 15 30°C.
- 2. Set the following switches as follows;
  - · POWER (power switch) to off
  - VOLUME (volume control) to -∞ ( min.)
  - DIRECT COUPLE (direct switch) to DIRECT
  - SPEAKER (speaker terminal) to no load (a speaker and a dummy resistor are not connected)

#### Adjustment

- Remove the top cover and turn the variable resistors VR11 and VR12 of ETC-453 and ETC-453J (tone and power unit) in the clockwise direction until they stop. Connect a DC voltmeter between the negative terminal 9 and the positive terminal 8, and between the positive terminal 17 and the negative terminal 18.
- Connect the power source cord to an AC outlet. Turn on the power switch. Turn the variable resistors UR11 and UR12 in the counterclockwise direction within one minute. Preset adjust the voltages at the respective test points as follows:
  - · PMA-770 15 ± 2 mV
  - PMA-750 11 ± 2 mV
- Set the variable resistors VR11 and VR12 2 to 3 minutes after the presetting as follows:
  - PMA-770 19 ± 1 mV
  - PMA-750 13 ± 1 mV

#### Adjustment of ETC-452 and ETC-452J

#### Preparation

- 1. Insert the short pin into the "phono" input terminal.
- Connect a digital voltmeter between the "REC" output terminals (LCH and RCH), the output voltage at the digital voltmeter must be 0.01 1 mV (DC).
- Connect a resistor of 100 k ohms (1/4 W) between the resistors R45 and R46 of 10 M ohms of the unit in order to make measurement easy (only for PMA-750).
- Set the RECOUT SELECTOR to the "phono" position and set the volume control to -∞ (\(\sigma\) min.).

#### Adjustment

 Turn on the power switch. After two minutes, perform the following procedures.

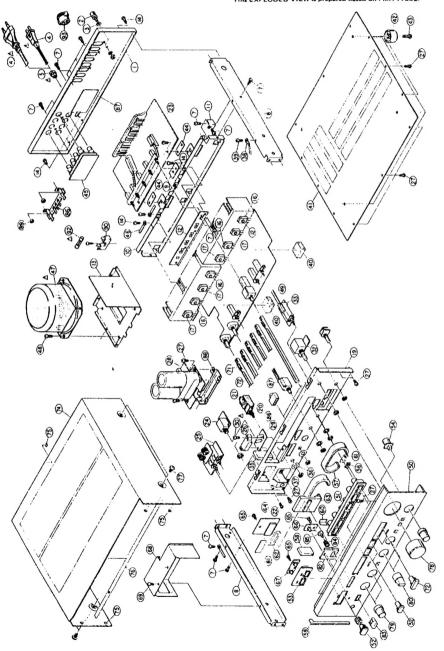
#### PMA-770, PMA-750

- Adjust the variable resistor 1 (semi-fixed resistor of 100 k ohms) so that the output for LCH at the digital voltmeter reads less than 0.5 V (DC).
- Adjust the variable resistor 2 (semi-fixed resistor of 100 k ohms) so that the output for RCH at the digital voltmeter reads less than 0.5 V (DC).

#### EXPLODED VIEW OF CHASSIS AND CABINET

Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.

This EXPLODED VIEW is prepared based on PMA-770E2.



#### **EXPLODED VIEW OF PARTS LIST**

#### • (PMA-770)

Note: 1. See addendum list below for the parts with asterisk (+) on the Ref. No. and the other parts not included in this list.
2. The list is prepared based on E2.
3. • Mark same as PMA-750E2.

| • M | ark | same | as PM | A-750 | E2. |
|-----|-----|------|-------|-------|-----|

| Ref. No.    | Part No.       | Part Name & Descriptions              | Ref. No.     | Part No.                 | Part Name & Descriptions        |
|-------------|----------------|---------------------------------------|--------------|--------------------------|---------------------------------|
| • 1         | 1050460000     | BACK PANEL                            | 52 •         | 1130291102               | PUSH KNOB (SP)                  |
| 2 •         | 2050071016     | TERMINAL ASS'Y                        | 53 ●         | 1460432107               | PANEL BUSH (SP)                 |
| 3 •         | 4770018001     | WASHER                                | 54 •         | 1130306000               | PUSH KNOB (LOUDNESS) ASS'Y      |
| ▲74 美國      | 型2062002031章   | AC CORD                               | 55           | -                        | _                               |
| A 5         | 進4450020005中   | CORD BUSH 3                           | 56           | 1430224002               | LENS                            |
| · A :6      | Marie Contract | 1944年1月1日 1945年1945年1945年1            | 57 •         | 4610155011               | BLIND                           |
| 7 •         | 4730354035     | TAPPING SCREW (2)3×8 MFN1B            | 58 •         | 4610155024               | BLIND                           |
| 8 •         | 4120733224     | SIDE CHASSIS                          | 59 •         | 4610155040               | BLIND                           |
| 9 •         | 4410355008     | HOLD PLATE                            | 60           | 1250015006               | BLIND SHEET (B)                 |
| 10 •        | 4110320113     | MAIN CHASSIS                          | 61           | 1430240002               | FILTER                          |
| 11 •        | 4120965018     | SUPPORT BRACKET                       | 62 •         | 1430230009               | WINDOW PLATE                    |
| 12 •        | 4410353000     | SHEET                                 | 63 •         | 1430228008               | WINDOW                          |
| 13 •        | 4110333003     | TRANS CHASSIS ASS'Y                   | 64           | ETC-0454B3               | LCDUNIT                         |
| 14 •        | 4770064107     | FIXING SCREW                          | 65 •         | 4770096007               | PUSH RIVET                      |
| 15 •        | 4170153100     | POWER RADIATOR                        | 66           | ETC-0454B5               | POWER LED UNIT                  |
| 16          | 2710150028     | TRANSISTOR 2SA1146(R)/(O)             | 67           | ETC-0454B4               | SPEAKER LED UNIT                |
| 17          | 2730298023     | TRANSISTOR 2SC2706(R)/(O)             | 68           | 4120988008               | LAMP COVER                      |
| 18 •        | 4700012022     | CROSS PAN SCREW WITH W.S.W            | 69           | 4470052009               | FIX. SCREW                      |
|             | 1              | 3x12                                  | 70 •         | 4120962008               | CONNECTING BRACKET              |
| 19 •        | 4110321206     | FRONT CHASSIS                         | 71 •         | 4630274066               | SPRING                          |
| 1000        | 21242630223    | PUSH SWITCH CONTROL 450 V             | 72 •         | 1130290103               | PUSH KNOB (INPUT)               |
| 22 •        | 2538003014.5   | ECEHAMIC CAP 0.00474F8450.V           | 73 •         | 1130291102               | PUSH KNOB (SP)                  |
| 22.         | 4700009006     | CROSS PAN SCREW WITH S.<br>WASHER 3×6 | 74 •         | 1020128000               | TOP COVER                       |
| *23         | ETC-045281     | INPUT & EQ. UNIT                      | 75 •         | 1040034006               | STOPPER                         |
| *24         | ETC-045282     | HEADPHONE JACK UNIT                   | 76 •         | 1220069008               | SPACER                          |
| *25         | ETC-045283     | SPEAKER SWITCH UNIT                   | 77 •         | 4734801005               | TAPPING SCREW (TRUS) 4×8 KNOB   |
| 26          | 1430229007     | L.C.D. LENS                           | 78 •<br>79 • | 1120265203               | KNOB (A)                        |
| 27 •        | 4730354019     | TAPPING SCREW (2)3×8                  | 80           | 1120359106<br>1120360001 | KNOB (B)                        |
| 28          | ETC-0454B1     | RECT & LCD UNIT                       | 81 •         | 1430354019               | COLOR PLATE                     |
| 29          | ETC-0454B2     | LAMPUNIT                              | 82 •         | 1460430109               | PANEL BUSH (POWER)              |
| 30 •        | 4730358015     | TAPPING SCREW (2)3×14                 | 83 •         | 1130171222               | PUSH KNOB ASS'Y                 |
| 31          | ETC-04531      | TONE & POWER UNIT                     | 84 •         | 4630220007               | SPRING                          |
| 32          | ETC-04532      | VOLUME UNIT                           | 85 •         | 1190041002               | STOPPER                         |
| 33          | ETC-04533      | CARTRIDGE SW UNIT                     | 86 •         | 2050089008               | 7P W TERMINAL                   |
| 34 •        | 2120197008     | ROTARY REMOTE                         | 87 •         | 4150088004               | INSULATING SHEET                |
| 35          | 4610155037     | BLIND                                 | 88 •         | 4700042005               | CROSS PAN SCREW WITH S.         |
| 36 ●        | 1250014007     | BLIND SHEET (A)                       |              | 1100012000               | WASHER 3x8 (BLACK)              |
| 37 ●        | 4150208004     | INSULATING SHEET                      | 89 •         | 4756008008               | NUT ø3                          |
| 38 •        | 2030176106     | WIRE ASS'Y                            | 90 •         | 2020013004               | FUSE HOLDER                     |
| 39 ◆        | 4700044005     | TAPPING SCREW WITH W. 3x8             | 91 •         | 5130159185               | FUSE LABEL                      |
| 40 •        | 4610157080     | CUSHION                               | 92 •         | 2061015087               | FUSE (4A)                       |
| 41 •        | 1050450007     | BOTTOM COVER                          | 93 •         | 2038084009               | 5P CONNECTOR (DIN)              |
| 42 •        | 1048001002     | FOOT                                  | 94 •         | 2412156003               | CARBON FILM RESISTOR            |
| 43 •        | 4730355018     | TAPPING SCREW (2)3×10                 |              |                          | 470 k ohm                       |
| 44 •        | 4150197005     | INSULATING SHEET                      | 95 ◆         | 4630274024               | SPRING                          |
| *45         | ETC-045284     | SPEAKER TERMINAL UNIT                 | BACKIN       | C P ACCCCCODI            | CO ( ) A CARNO COCO MICHI       |
| 46 •        | EP-6214        | CORD HOLDER                           | FACKIN       | G & ACCESSORI            | ES (not included EXPLODED VIEW) |
| 14.00 41 MM | 異 2335241202 : | POWER TRANS                           | a •          | 5040064001               | CABINET SHEET                   |
| 48          | 4730454032     | TAPPING SCREW (2)4×8 (BLACK)          | b •          | 5030301101               | CUSHION                         |
| 49 •        | 4350052018     | FLEXIBLE SLIDER                       | *c           | 5010755049               | CARTON CASE                     |
| 50          | 1440912003     | FRONT PANEL                           | d            | 5110994001               | INST. MANUAL                    |
| 51          | 1460433106     | PANEL BUSH (INPUT)                    |              |                          |                                 |

#### ADDENDUM LIST

| Ref. No.    | Part Name & Descriptions       | Part No.            |  |  |                   |  |  |
|-------------|--------------------------------|---------------------|--|--|-------------------|--|--|
|             | Tart Hame & Descriptions       | E1 for Hong Kong    | EK for U.K.  | E3 for U.S.A.  |                   |  |  |
| 1           | BACK PANEL                     | 1050462008          |  |  |                   |  |  |
|             | AC CORD                        | 2006031026          | CONTRACTOR!  | ALTERIOR DESCRIPTION AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRE | CONTROL OF STREET |  |  |
|             | CORD BUSH                      | 通過 MD-3802 会に       |  |  | FILE CONTRACTOR   |  |  |
| <b>₹0</b> ₩ | AC OUTLETS                     | 2033909008          |  | THE TAX AND THE  | 16                |  |  |
| Δ· 20 🛊     | PUSH SWITCH TO THE STATE OF    |                     |  | TO COLUMN TO SERVICE OF THE PARTY OF THE PAR |                   |  |  |
| 3.773.512話  | CAPACITOR                      | 公認 2538003014 金属    |  | CALLE CO   | 23.35             |  |  |
| 23          | INPUT & EQUNIT                 | ETC-0452D1          |  |  |                   |  |  |
| 24          | HEADPHONE JACK UNIT            | ETC-0452D2          |  |  |                   |  |  |
| 25          | SPEAKER SWITCH UNIT            | ETC-0452D3          |  |  |                   |  |  |
| 45          | SPEAKER TERMINAL UNIT          | ETC-0452D4          |  |  |                   |  |  |
| 经国际4/数      | POWER TRANS.                   | 塔爾羅 2335304107 開發   | The state of the s |  | Carrier Carrier   |  |  |
| TATORTO TA  | VOLTAGE SEL. SWITCH AND COLOR  | F5W 0100100000 1000 |  |  |                   |  |  |
| 97          | CROSS PAN SCREW 3x6 (BLACK)    |                     | STATE OF THE PROPERTY OF THE PARTY OF THE PA | ACAD METERING.   | LAND CONTRACTOR   |  |  |
|             |                                | 4711303034          |  |  |                   |  |  |
|             | PACKING & ACCESSORIES (not inc | luded EXPLODED VIEW | }  |  |                   |  |  |
| c           | CARTON CASE                    | 5010755049          |  |  |                   |  |  |

# EXPLODED VIEW OF PARTS LIST

• (PMA-750)

Note: 1. See addendum list below for the parts with asterisk (\*) on the Ref. No. and the other parts not included in this list.
2. The list is prepared based on E2.
3. • Mark same as PMA-770E2.

|            |            |                                | 3. • Mark same as PMA-770E2, |            |                            |  |  |
|------------|------------|--------------------------------|------------------------------|------------|----------------------------|--|--|
| Ref. No.   | Part No.   | Part Name & Descriptions       | Ref. No.                     | Part No.   | Part Name & Descriptions   |  |  |
| • 1        | 1050459008 | BACK PANEL                     | 52 •                         | 1130291102 | PUSH KNOB (SP)             |  |  |
| 2 •        | 2050071016 | TERMINAL ASS'Y                 | 53 •                         | 1460432107 | PANEL BUSH (SP)            |  |  |
| 3 •        | 4770018001 | WASHER                         | 54 •                         | 1130306000 | PUSH KNOB (LOUDNESS) ASS'Y |  |  |
| • Д. 4     | 2062002031 | AC CORD                        | 55                           | -          |                            |  |  |
| <b>★</b> 5 | 4450020005 | CORD BUSH                      | 56                           | -          | _                          |  |  |
|            | -          | [15] - 15] [17] [17] [17] [17] | 57 •                         | 4610155011 | BLIND                      |  |  |
| 7 •        | 4730354035 | TAPPING SCREW (2)3×8 MFN1B     | 58 •                         | 4610155024 | BLIND                      |  |  |
| 8 •        | 4120733208 | SIDE CHASSIS                   | 59 •                         | 4610155040 | BLIND                      |  |  |
| 9 •        | 4410355008 | HOLD PLATE                     | 60                           | _          | -                          |  |  |
| 10 •       | 4110320100 | MAIN CHASSIS                   | 61                           | _          | _                          |  |  |
| 11 •       | 4120965005 | SUPPORT BRACKET                | 62 •                         | 1430230009 | WINDOW PLATE               |  |  |
| 12 •       | 4410353000 | SHEET                          | 63 •                         | 1430228008 | WINDOW                     |  |  |
| 13 •       | 4110334002 | TRANS CHASSIS ASS'Y            | *64                          | ETC-0454K3 | LCDUNIT                    |  |  |
| 14 •       | 4770064107 | FIXING SCREW                   | 65 •                         | 4770096007 | PUSH RIVET                 |  |  |
| 15 •       | 4170156000 | POWER RADIATOR                 | *66                          | ETC-0454K5 | POWER LED UNIT             |  |  |
| 16         | 2710143022 | TRANSISTOR 2SA1187(0)/(Y)      | *67                          | ETC-0454K4 | SPEAKER LED UNIT           |  |  |
| 17         | 2730243025 | TRANSISTOR 2SC2838(O)/(Y)      | *68                          | ETC-0454K6 | LED UNIT                   |  |  |
| 18 •       | 4700012022 | CROSS PAN SCREW WITH W.S.W.    | *69                          | ETC-0454K7 | LED UNIT                   |  |  |
|            |            | 3x12                           | 70 •                         | 4120962008 | CONNECTING BRACKET         |  |  |
| 19 •       | 4110321206 | FRONT CHASSIS                  | 71 •                         | 4630274066 | SPRING                     |  |  |
| • 1 20 •   | 2124263022 | PUSH SWITCH PROPERTY AND THE   | 72 •                         | 1130290103 | PUSH KNOB (INPUT)          |  |  |
| • 1 21 •   | 2538003014 | CERAMIC CAP. 0.00474F 450 W    | 73 •                         | 1130291102 | PUSH KNOB (SP)             |  |  |
| 22 •       | 4700009006 | CROSS PAN SCREW WITH S.        | 74 •                         | 1020128000 | TOP COVER                  |  |  |
|            |            | WASHER 3x6                     | 75 •                         | 1040034006 | STOPPER                    |  |  |
| *23        | ETC-0452K1 | INPUT & EQ. UNIT               | 76 •                         | 1220069008 | SPACER                     |  |  |
| *24        | ETC-0452K2 | HEADPHONE JACK UNIT            | 77 •                         | 4734801005 | TAPPING SCREW (TRUS) 4x8   |  |  |
| *25        | ETC-0452K3 | SPEAKER SWITCH UNIT            | 78 •                         | 1120265203 | KNOB                       |  |  |
| 26         | 1430229010 | L.C.D. LENS                    | 79 •                         | 1120359106 | KNOB (A)                   |  |  |
| 27 •       | 4730354019 | TAPPING SCREW (2)3x8           | 80                           | 1120374000 | KNOB (C)                   |  |  |
| *28        | ETC-0454K1 | RECT & LCD UNIT                | 81 •                         | 1430354019 | COLOR PLATE                |  |  |
| *29        | ETC-0454K2 | LAMP UNIT                      | 82 •                         | 1460430109 | PANEL BUSH (POWER)         |  |  |
| 30 •       | 4730358015 | TAPPING SCREW (2)3x14          | 83 •                         | 1130171222 | PUSH KNOB ASS'Y            |  |  |
| 31         | ETC-0453J1 | TONE & POWER UNIT              | 84 •                         | 4630220007 | SPRING                     |  |  |
| 32         | ETC-0453J2 | VOLUME UNIT                    | 85 •                         | 1190014002 | STOPPER                    |  |  |
| 33         | ETC-0453J3 | CARTRIDGE SW UNIT              | 86 •                         | 2050089008 | 7P W TERMINAL              |  |  |
| 34 •       | 2120197008 | ROTARY REMOTE                  | 87 •                         | 4150088004 | INSULATING SHEET           |  |  |
| 35         | -          | -                              | 88 •                         | 4700042005 | CROSS PAN SCREW WITH       |  |  |
| 36 •       | 1250014007 | BLIND SHEET (A)                |                              | 4700042005 | S. WAHSER 3×8 (BLACK)      |  |  |
| 37 •       | 4150208004 | INSULATING SHEET               | 89 •                         | 4756008008 | NUT \$3                    |  |  |
| 38 •       | 2030176106 | WIRE ASS'Y                     | 90 •                         | 2020013004 | FUSE HOLDER                |  |  |
| 39 •       | 4700044005 | TAPPING SCREW WITH W 3x8       | 91 •                         | 5130159185 | FUSE LABEL                 |  |  |
| 40 •       | 4610157080 | CUSHION                        | 92 •                         | 2061015087 | FUSE (4A)                  |  |  |
| 41 •       | 1050450007 | BOTTOM COVER                   | 93 •                         | 2038084009 | 5P CONNECTOR (DIN)         |  |  |
| 42 •       | 1048001002 | FOOT                           | 94 •                         | 2412156003 | CARBON FILM RESISTOR       |  |  |
| 43 •       | 4730355018 | TAPPING SCREW (2)3×10          |                              |            | 470 k ohm                  |  |  |
| 44 •       | 4150197005 | INSULATING SHEET               | 95 •                         | 4630274024 | SPRING                     |  |  |
| *45        | ETC-0452K4 | SPEAKER TERMINAL UNIT          |                              |            |                            |  |  |
| 46 •       | EP-6214    | CORD HOLDER                    |                              | PACKIN     | G ACCESSORIES              |  |  |
| • 147      | 2335344002 | POWER TRANS                    | 8 •                          | 5040064001 | CABINET SHEET              |  |  |
| *48        | 4730454032 | TAPPING SCREW (2)4x18 (BLACK)  | b •                          | 5030301101 | CUSHION                    |  |  |
| 49 •       | 4350052018 | FLEXIBLE SLIDER                | · c                          | 5010755036 | CARTON CASE                |  |  |
| 50<br>51   | 1440928000 | FRONT PANEL                    | d                            | 5110994001 | INST. MANUAL               |  |  |
|            | 1460455003 | PANEL BUSH (INPUT)             |                              | 0110001001 |                            |  |  |

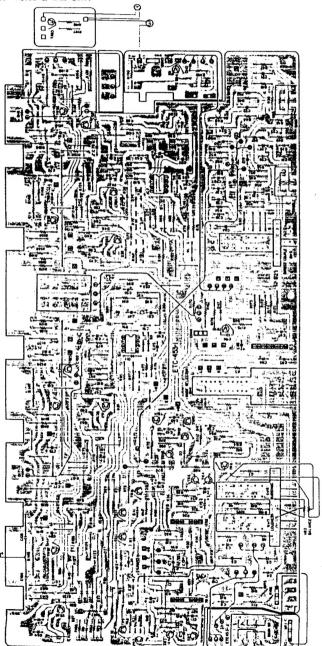
#### ADDENDUM LIST

|  |  | Part No.   |  |                           |            |  |  |
|--|--|--|--|---------------------------|------------|--|--|
| Ref. No.                                     | Part Name & Descriptions   | E1 for Hong Kong   | EK for U.K.  | E3 for U.S.A.             |            |  |  |
| 1 4 4 4 5 A 6 20 A 21 23 24                  | BACK PANEL AC CORD CORD BUSH AC OUTLET PUSH SWITCH CAPACITOR INPUT & EQ. UNIT HEADPHONE JACK UNIT                          | 1050459008<br>2062020000<br>MD-2982H<br>2124263022<br>2538003014<br>ETC-0452K1<br>ETC-0452K2   | 1050461009<br>#2006031026<br>MD-3802<br>2033909008<br>#2124263022<br>2538003014<br>ETC-0452M1                      |                           |            |  |  |
| 25<br>28<br>29<br>45<br>47<br>48<br>64<br>66 | SPEAKER SWITCH UNIT RECT & LCD UNIT LAMP UNIT SPEAKER TERMINAL UNIT POWER TRANS TAPPING SCREW LCD UNIT POWER TERMINAL UNIT | 4700031016<br>ETC-0454K3<br>ETC-0454K5   | ETC-0452M3<br>ETC-0454M1<br>ETC-0454M2<br>ETC-0452M4<br>IV 2335343003 IV<br>4730454032<br>ETC-0454M3<br>ETC-0454M5 | <b>Man</b> dler - Sweller | কিচলকাট    |  |  |
| 67<br>68<br>69<br><b>2∆</b> 96<br>97<br>98   | CROSS PAN SCREW 3×6 (BLACK) WATTAGE LABEL  | 5130683004   | ETC-0454M4<br>ETC-0454M6<br>ETC-0454M7<br>#2120186008  |                           | eja-well o |  |  |
| 99<br>100<br>101<br>102<br>103<br>104<br>105 | VOLTAGE LABEL BLIND SHEET WIRE ASS'Y EARTH LABEL TOOTH WASHER \$3 CAUTION CARD TOOTH WASHER \$4                            | 5130362008<br>5130348006<br>2030176151<br>5130140000<br>4753001051<br>5130364006<br>4753100004 | -<br>-<br>-<br>-<br>-  |                           |            |  |  |
|  | PACKING & ACCESSORIES (not inc   | luded EXPLODED VIEW  | )  | 1                         | 1          |  |  |
| c<br>e<br>f                                  | CARTON CASE<br>IMPORTANT LABEL<br>GUARANTEE CARD   | 5010755036<br>5130372001<br>5150230000   | 5010755036<br>   |                           |            |  |  |

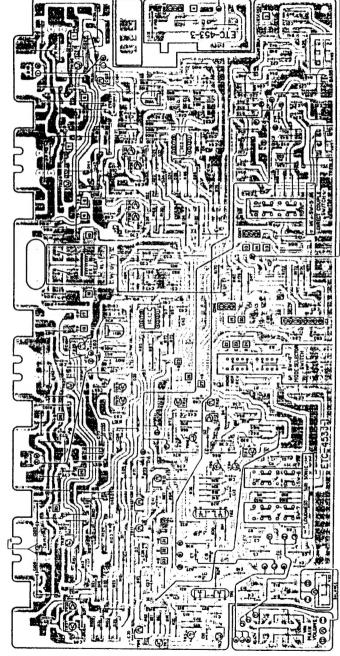
#### PRINTED WIRING BOARD PATTERNS AND PARTS LIST

• For PMA-770

ETC-453 TONE & EQ. UNIT



• For PMA-750 ETC-453J TONE & EQ. UNIT



# ETC-453 & ETC-453J TONE & EQ. UNIT PARTS LIST

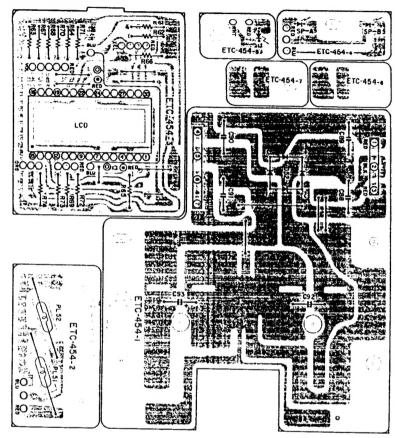
| Ref.<br>No.    | Part No.                 | Part Name                        | & Descriptions             | Ref.         | Part No.                   | Part Name & Descriptions   |
|----------------|--------------------------|----------------------------------|----------------------------|--------------|----------------------------|--|
|                |                          | SEMICONDUCTOR                    | S                          | 1            |                            | RESISTORS  |
| IC001          | 2630118001               | NJM4560D                         | INTEGRATED CIRCUIT         | 11           |                            | (not included Carbon Film ±5%, %W Type)  |
| 10002          | 2630118001               | NJM4560D                         | INTEGRATED CIRCUIT         | VR001        | 2110257000                 | VARIABLE RESISTOR 55 k ohm MAIN  |
| IC005<br>TR001 | 2630102004               | HA12002                          | INTEGRATED CIRCUIT         | VR003        | 2110311001                 | VARIABLE RESISTOR 100 k ohm RAL ANCI   |
| indo           | 2750024033               | μPA68H(L)/(H)                    | FIELD EFFECT               |              | 2110246011                 | VARIABLE RESISTOR 100 k ohm BASS   |
| TR002          | 2750024033               | #PA68H(L)/(H)                    | TRANSISTOR<br>FIELD EFFECT |              | 2110253004                 |  |
| 1              |                          | - House                          | TRANSISTOR                 | VROTE        | 2116025058<br>2 2116025058 |  |
| TR003          |                          | 2SC1841(F)/(E)                   | TRANSISTOR                 | 8013         | 2412314007                 |  |
| TR004          |                          | 2SC1841(F)/(E)                   | TRANSISTOR                 | R014         | 2412314007                 | 100 ohm ±5% %W CARBON FILM   |
| TR005          | 2730235020<br>2730235020 | 2SC1841(F)/(E)                   | TRANSISTOR                 | R015         | 2412320017                 | 8.2 k ohrn 12% %W CARBON FILM  |
| TR007          |                          | 2SC1841(F)/(E)<br>2SA916(L)      | TRANSISTOR                 | R016         | 2412320017                 | 8.2 k ohrn ±2% ¼W CARBON FILM  |
| TR008          | 2710110000               | 2SA916(L)                        | TRANSISTOR<br>TRANSISTOR   | R017         | 2412320017                 | 8.2 k ohm ±2% %W CARBON FILM   |
| TR009          | 2710110000               | 25A916(L)                        | TRANSISTOR                 | R018         | 2412320017                 |  |
| TR010          | 2710110000               | 2SA916(L)                        | TRANSISTOR                 | R020         | 2412314010                 |  |
| TR011          |                          | 2SC1941(L)                       | TRANSISTOR                 | R021         | 2412314010                 |  |
| TR013          | 2740060007               | 2SC1941(L)<br>2SD667A(C)         | TRANSISTOR                 | R022         | 2412314010                 | 390 ohm ±5% %W CARBON FILM   |
| TR014          | 2740060007               | 2SD667A(C)                       | TRANSISTOR<br>TRANSISTOR   | R031         | 2422007003                 | 20 M ohm ±10% %W CARBON COMPOSIT   |
| TR015          | 2720053005               | 2SB647A(C)                       | TRANSISTOR                 | R032         | 2422007003                 | The state of the control of the cont |
| TR016          | 2720053005               | 2SB647A(C)                       | TRANSISTOR                 | R036         | 2412314036                 |  |
| TR025          |                          | 2SC1815(BL)                      | TRANSISTOR                 | R065         | 2440051028                 | 750 ohm ±5% %W CARBON COMPOSIT<br>6.8 k ohm ±5% 1W METAL OXIDE FILM  |
| TR031          | 2730193015<br>2730111063 | 2SC1815(BL)                      | TRANSISTOR                 | R066         | 2440051028                 |  |
|                | 2730111063               | 2SC1213(D)/(C)<br>2SC1213(D)/(C) | TRANSISTOR                 | R067         | 2412313008                 | 100 ohm ±2% ¼W CARBON FILM   |
| TR033          | 2710040073               | 2SA673A(D)/(C)                   | TRANSISTOR                 | R068         | 2412313008                 | 100 ohm ±2% ¼W CARBON FILM   |
| TR034          | 2710040073               | 2SA673A(D)/(C)                   | TRANSISTOR                 | R069         | 2412313008                 |  |
| TR035          | 2730199027               | 2SC2238(Y)/(O)                   | TRANSISTOR                 | R070         | 2412313008                 |  |
| TR036          | 2730199027               | 2SC2238(Y)/(O)                   | TRANSISTOR                 | R072         | 2440025025                 | The state of the s |
| TR037          |                          | 2SA968(Y)/(O)                    | TRANSISTOR                 | R073         | 2440025025                 | 47 ohm ±5% 1W METAL OXIDE FILM<br>47 ohm ±5% 1W METAL OXIDE FILM   |
| TR050          |                          | 2SA968(Y)/(O)<br>2SC1815(Y)/(GR) | TRANSISTOR                 | R074         | 2440025025                 | 47 ohm ±5% 1W METAL OXIDE FILM   |
| TR054          | 2710102005               | 2SA1015(Y)                       | TRANSISTOR<br>TRANSISTOR   | R077         | 2412314023                 | 470 ohm ±5% %W CARBON FILM   |
| TR065          | 2730177007               | 2SC1626(Y)                       | TRANSISTOR                 | R078         | 2412314023                 | The state of the s |
| D001           | 2760171028               | HV-23G(YW)                       | DIODE                      | R079<br>R080 | 2412312003<br>2412312003   |  |
| D002           | 2760171028               | HV-23G(YW)                       | DIODE                      | R085         | 2440046020                 | 1 k ohm ±5% ¼W CARBON FILM<br>2.7 k ohm ±5% 1W METAL OXIDE FILM  |
| D04            | 2760216019               | KB-265<br>KB-265                 | DIODE                      | R086         | 2440046020                 |  |
| D05            | 2760049008               | 152076                           | DIODE                      | R087         | 2440046020                 | 2.7 k ohm ±5% 1W METAL OXIDE FILM  |
| D06            | 2760049008               | 152076                           | DIODE                      | R088         | 2440046020                 | 2.7 k ohm ±5% IW METAL OXIDE FILM  |
| D007           | 2760049008               | 1S2076                           | DIODE                      | F107         | 2412313053<br>2412313053   | 1 k ohm ±2% %W CARBON FILM   |
| D008           | 2760049008               | 1\$2076                          | DIODE                      | R111         | 2412322015                 |  |
| D012           | 2760224001               | HZ-30                            | CIODE                      | R112         | 2412322015                 | 82 ohm ±5% %W CARBON FILM<br>82 ohm ±5% %W CARBON FILM   |
| D017           | 2760224001<br>2760049008 | HZ-30<br>1\$2076                 | DIODE                      | R115         | 2412313053                 | 1 k ohm ±2% %W CARBON FILM   |
| D018           | 2760049008               | 1\$2076                          | DIODE                      | R116         | 2412313053                 | 1 k ohm ±2% %W CARBON FILM   |
| D019           | 2760049008               | 182076                           | DIODE                      | R121         | 2440107024                 | 5.6 k ohm ±5% 2W METAL OXIDE FILM  |
| D020           | 2760049008               | 1S2076                           | DIODE                      | R123         | 2440107024<br>2440107024   | 5.6 k ohm 15% 2W METAL OXIDE FILM<br>5.6 k ohm 15% 2W METAL OXIDE FILM   |
| D021           | 2760049008               | 152076                           | DIODE                      | R124         | 2440107024                 | 5.6 k ohm ±5% 2W METAL OXIDE FILM<br>5.6 k ohm ±5% 2W METAL OXIDE FILM   |
| 0023           | 2760049008<br>2760049008 | 1\$2076<br>1\$2076               | DIODE                      | R125         | 2440041025                 | 1 k ohm ±5% 1W METAL OXIDE FILM  |
| D024           | 2760049008               | 152076                           | DIODE                      | R126         | 2440041025                 | 1 k ohm ±5% 1W METAL OXIDE FILM  |
| D025           | 2760049008               | 152076                           | DIODE                      | R127         | 2440041025                 | 1 k ohm ±5% 1W METAL OXIDE FILM  |
| D026           | 2760049008               | 1S2076                           | DIODE                      | R129         | 2440041025<br>2410219007   | 1 k ohm ±5% 1W METAL OXIDE FILM<br>27 k ohm ±5% %W CARBON FILM   |
| D027           | 2760049008               | 1\$2076                          | DIODE                      | R130         | 2410219007                 | 27 k ohm ±5% %W CARBON FILM<br>27 k ohm ±5% %W CARBON FILM   |
| D028           | 2760049008<br>2760049008 | 152076<br>152076                 | DIODE                      | R131         | 2412313095                 | 120 ohm ±2% %W CARBON FILM   |
| D030           | 2760049008               | 1\$2076                          | DIODE                      | R132         | 2412313095                 | 120 ohm ±2% %W CARBON FILM   |
| D031           | 2760049008               | 152076                           | DIODE                      | R133         | 2412313095                 | 120 ohm ±2% %W CARBON FILM   |
| D032           | 2760049008               | 152076                           | DIODE                      | R134         | 2412313095                 | 120 ohm ±2% %W CARBON FILM   |
| D033           | 2760049008               | 1\$2076                          | DIODE                      | R136         | 2440013024                 | 4.7 ohm ±5% 1W METAL OXIDE FILM  |
| D034<br>D035   | 2760049008               | 152076                           | DIODE                      | R137         | 2440013024                 | 4.7 ohm ±5% 1W METAL OXIDE FILM<br>4.7 ohm ±5% 1W METAL OXIDE FILM   |
|                | 2760049008<br>2760049008 | 152076                           | DIODE                      | R138         | 2440013024                 | 4.7 ohm ±5% 1W METAL OXIDE FILM  |
|                | 2760049008               | 1S2076<br>1S2076                 | DIODE                      | A139         | 2412315035                 | 33 dhm 12% XW CARBON FILM  |
| D038           | 2760049008               | 152076                           | DIODE                      | R140         | 2412315035                 | 33 ohm ±2% %W CARBON FILM  |
| D039           | 2760221004               | HZ-36                            | DIODE                      | R141         | 2412315035                 | 33 ohm ±2% %W CARBON FILM  |
|                | 2760221004               | HZ-36                            | DIODE                      | R143         | 2412315035<br>2412315035   | 33 ohm ±2% XW CARBON FILM  |
| D041<br>D042   | 2760049008               | 152076                           | DIODE                      | F144         | 2412315035                 | 33 ohm ±2% %W CARBON FILM<br>33 ohm ±2% %W CARBON FILM   |
|                | 2760049008<br>2760049008 | 152076                           | DIODE                      | R145         | 2432026003                 | 0.47/0.47 ohm ±10% 3.15W WIRE WOUND  |
|                | 2760049008               | 1\$2076<br>1\$2076               | DIODE                      | R146         | 2432026003                 | 0.47/0.47 ohm ±10% 3.15W WIRE WOUND  |
| D045           | 2760221004               | HZ-36                            | DIODE                      | R147         | 2432026003                 | 0.47/0.47 ahm ±10% 3.15W WIRE WOUND  |
| D046           | 2760221004               | HZ-36                            | DIODE                      | R148<br>R149 | 2432026003                 | 0.47/0.47 ohm ±10% 3.15W WIRE WOUND  |
|                | 2760049008               | 152076                           | DIODE                      | R150         | 2412315035<br>2412315035   | 33 ohm ±2% %W CARBON FILM  |
| D049           | 2760221004               | HZ-36                            | DIODE                      | R151         | 2440037026                 | 33 ohm ±2% %W CARBON FILM<br>470 ohm ±5% 1W METAL OXIDE FILM   |
|                |                          |                                  |                            |              |                            | SOM THE MICHAL UNIDE FILM  |

(Con.)

| (Con.)       |                          |  |              |                          |  |
|--------------|--------------------------|--|--------------|--------------------------|--|
| Ref.<br>No.  | Part No.                 | Part Name & Descriptions                                     | Ref.<br>No.  | Part No.                 | Part Name & Descriptions                                     |
| R152         | 2440037026               | 470 ohm ±5% IW METAL OXIDE FILM                              | C048         | 2544019005               | 220µF 16V ELECTROLYTIC                                       |
| R153         | 2440013024               | 4.7 ohm 15% 1W METAL OXIDE FILM                              | C051         | 2544019005               | 220µF 16V ELECTROLYTIC                                       |
| R154         | 2440013024               | 4.7 ohm ±5% 1W METAL OXIDE FILM                              | C052         | 2544019005               | 220µF 16V ELECTROLYTIC                                       |
| R155         | 2440013024               | 4.7 ohm ±5% 1W METAL OXIDE FILM                              | C053         | 2544016008               | 33µF 16V ELECTROLYTIC  |
| R156         | 2440013024               | 4.7 ohm ±5% IW METAL OXIDE FILM                              | C054         | 2544016008               | 33µF 16V ELECTROLYTIC  |
| R157         | 2440022028               | 27 ohm ±5% 1W METAL OXIDE FILM                               | C055         | 2544016008               | 33µF 16V ELECTROLYTIC  |
| R158         | 2440022028               | 27 ohm ±5% 1W METAL OXIDE FILM                               | C056         | 2544016008               | 33µF 16V ELECTROLYTIC  |
| R162         | 2440041025               | 1 k ohm ±5% 1W METAL OXIDE FILM                              | C057         | 2554139001               | 560pF ±5% 50V PLASTIC FILM                                   |
| R163         | 2412315051               | 51 ohm ±2% %W CARBON FILM                                    | C058         | 2554139001               | 560pF ±5% 50V PLASTIC FILM                                   |
| R164         | 2412315051               | 51 ohm ±2% %W CARBON FILM                                    | C059         | 2554139001               | 560pF ±5% 50V PLASTIC FILM                                   |
| R165         | 2420203003               | 10 M ohm ± 10% %W CARBON COMPOSIT                            | C060         | 2554139001               | 560pF ±5% 50V PLASTIC FILM                                   |
| R166         | 2420203003               | 10 M ohm ±10% %W CARBON COMPOSIT                             | C061         | 2521010001               | 10pF ±0.5pF 50V MICA FILM                                    |
| R167         | 2410219007               | 27 k ohm ±5% %W CARBON FILM                                  | C062         | 2521010001               | 10pF ±0.5pF 50V MICA FILM                                    |
| R168         | 2410219007               | 27 k ohm ±5% %W CARBON FILM                                  | C063         | 2554165004               | 0.0068uF ±5% 50V PLASTIC FILM                                |
| R171         | 2410175002               | 390 ohm ±5% %W CARBON FILM                                   | C064         | 2554165004               | 0.0068#F ±5% 50V PLASTIC FILM                                |
| R176         | 2440040026               | 820 ohm ±5% 1W METAL OXIDE FILM                              | C065         | 2554161008               | 0.0047µF ±5% 50V PLASTIC FILM                                |
| R190         | 2440023027               | 33 ohm ±5% 1W METAL OXIDE FILM                               | C066         | 2554161008               | 0.0047µF ±5% 50V PLASTIC FILM                                |
| R195         | 2412031018               | 510 k ohm ±5% %W CARBON FILM                                 | C067         | 2554161008               | 0.0047µF ±5% 50V PLASTIC FILM                                |
|              |                          | (STANDING)   | C068         | 2554161008               | 0.0047uF ±5% 50V PLASTIC FILM                                |
| R196         | 2412031018               | 510 k ohm ±5% %W CARBON FILM                                 | C069         | 2554165004               | 0.0068#F ±5% 50V PLASTIC FILM                                |
|              |                          | (STANDING)   | C070         | 2554165004               | 0.0068#F ±5% 50V PLASTIC FILM                                |
|              |                          | CAPACITORS   | C071         | 2544059078               | 2.2µF 63V ELECTROLYTIC                                       |
|              |                          | (not included Ceramic Capacitor 50 V Type)                   | C073         | 2544059036               | 4.7µF 63V ELECTROLYTIC                                       |
|              |                          |  | C074         | 2544059036               | 4.7µF 63V ELECTROLYTIC                                       |
| C001         | 2554082048               | 0.18µF ±5% 100V PLASTIC FILM                                 | C075         | 2554169000               | 0.01µF ±5% 50V PLASTIC FILM                                  |
| C002         | 2554082048               | 0.18µF ±5% 100V PLASTIC FILM                                 | C076         | 2554169000               | 0.01µF ±5% 50V PLASTIC FILM                                  |
| C003         | 2554142001               | 750pF ±5% 50V PLASTIC FILM                                   | C077         | 2544059036               | 4.7µF 63V ELECTROLYTIC                                       |
| C004         | 2554142001               | 750pF ±5% 50V PLASTIC FILM                                   | C078         | 2544059036               | 4.7µF 63V ELECTROLYTIC                                       |
| C005         | 2554193005               | 0.1µF ±5% 50V PLASTIC FILM                                   | C079         | 2544059078               | 2.2µF 63V ELECTROLYTIC                                       |
| C006<br>C007 | 2554193005               | 0.1µF ±5% 50V PLASTIC FILM                                   | C081         | 2521079039               | 47pF ±10% 500V MICA FILM                                     |
| C009         | 2544044009<br>2554121006 | 1µF ±5% 50V ELECTROLYTIC                                     | C082         | 2521079039               | 47pF ±10% 500V MICA FILM                                     |
| C010         | 2554121006               | 100pF ±5% 50V PLASTIC FILM<br>100pF ±5% 50V PLASTIC FILM     | C083         | 2544044009               | 1µF 500V ELECTROLYTIC  |
| C011         | 2554145008               |  | C084         | 2544066003               | 2.2µF 500V ELECTROLYTIC                                      |
| C012         | 2554145008               | 0.001µF ±5% 50V PLASTIC FILM<br>0.001µF ±5% 50V PLASTIC FILM | C085         | 2544005006               | 330µF 6.3V ELECTROLYTIC                                      |
| C013         | 2544044009               | 1µF 50V ELECTROLYTIC   | C087         | 2549015004               | 22µF ±10% 10V ELECTROLYTIC                                   |
| C015         | 2521026008               | 47pF ±5% 50V MICA FILM                                       | C089         | 2521079039               | 47pF ±10% 500V MICA FILM                                     |
| C016         | 2521026008               | 47pF ±5% 50V MICA FILM                                       | C090         | 2521079039               | 47pF ±10% 500V MICA FILM                                     |
| C017         | 2561008060               | 1µF ±10% 100V METALIZED                                      | C091         | 2521026008               | 47pF 1 ±5% 50V MICA FILM                                     |
| C018         | 2561008060               | 1µF ±10% 100V METALIZED                                      | C092         | 2521026008               | 47pF ±5% 50V MICA FILM                                       |
| C019         | 2521010001               | 10pF ±0.5pF 50V MICA FILM                                    | C093<br>C094 | 2521030007               | 68pF ±5% 50V MICA FILM                                       |
| C020         | 2521010001               | 10pF ±0.5pF 50V MICA FILM                                    |              | 2521030007               | 68pF ±5% 50V MICA FILM<br>0.1µF ±20% 25V CERAMIC             |
| C021         | 2554183002               | 0.039µF ±5% 50V PLASTIC FILM                                 | C099         | 2539015001               | 0.1µF ±20% 25V CERAMIC<br>0.01µF +8020% 50V CERAMIC          |
| C022         | 2554183002               | 0.039µF ±5% 50V PLASTIC FILM                                 | C102         | 2531024003               |  |
| C023         | 2551122095               | 0.27µF ±5% 50V PLASTIC FILM                                  | C103         | 2531024003               |  |
| C024         | 2551122095               | 0.27µF ±5% 50V PLASTIC FILM                                  | C104         | 2531024003<br>2531024003 | 0.01µF +80,-20% 50V CERAMIC<br>0.01µF +80,-20% 50V CERAMIC   |
| C025         | 2554161008               | 0.0047µF ±5% 50V PLASTIC FILM                                | C105         |                          |  |
| C026         | 2554161008               | 0.0047µF ±5% 50V PLASTIC FILM                                | C106         | 2531052004<br>2531052004 | 4700pF +100,-0% 500V CERAMIC<br>4700pF +100,-0% 500V CERAMIC |
| C027         | 2554127000               | 180pF ±5% 50V PLASTIC FILM                                   | C110         | 2544006005               | 4700F +100,-0% 500V CEHAMIC                                  |
| C028         | 2554127000               | 180pF ±5% SOV PLASTIC FILM                                   | 2110         | 1344000005               | L  |
| C029         | 2554147006               | 0.0012µF ±5% 50V PLASTIC FILM                                | L            |                          | SWITCHES   |
| C030         | 2554147006               | 0.0012µF ±5% 50V PLASTIC FILM                                | SW005        | 2124264005               | 1P PUSH SWITCH DIRECT COUPLE                                 |
| C031         | 2554155001               | 0.0027µF ±5% 50V PLASTIC FILM                                | SW006        |                          | 2P PUSH SWITCH LOUDNESS                                      |
| C032         | 2554155001               | 0.0027µF ±5% 50V PLASTIC FILM                                | SW007        |                          | 2P PUSH SWITCH SUBSONIC                                      |
| C033         | 2554187008               | 0.056#F ±5% 50V PLASTIC FILM                                 | SW008        |                          | 1P PUSH SWITCH CARTRIDGE                                     |
| C034         | 2554187008               | 0.056#F ±5% 50V PLASTIC FILM                                 | SW009        | 2120196009               | ROTARY SWITCH MODE   |
| C035         | 2521081043               | 10pF ±0.5pF -500V MICA FILM                                  |              | -                        | OTHER PARTS  |
| C036         | 2521081043<br>2554079048 | 10pF ±0.5pF 500V MICA FILM                                   |              | ,                        |  |
| C037         | 2554079048               | 0.01µF ±10% 100V PLASTIC FILM                                |              | 2220796008               | P.W. BOARD   |
| C039         | 2544060025               | 0.01µF ±10% 100V PLASTIC FILM                                | RL001        | 2140037009               | RELAY  |
| C040         | 2544060025               |  |              | EP-5667H1                | TERMINAL USED 4  |
| C041         | 2554121006               |  |              | 2035622008               | 3P CONNECTOR BASE POWER LED                                  |
| C042         | 2554121006               | 100pF ±5% 50V PLASTIC FILM<br>100pF ±5% 50V PLASTIC FILM     |              | 2050003000               | 3T LUG   |
| C045         | 2554121006               | 100pF ±5% 50V PLASTIC FILM                                   | PL002        | 3930068009               | PILOT LAMP 0.08A ASS'Y                                       |
| C046         | 2554121006               | 100pF ±5% 50V PLASTIC FILM                                   | PL003        | 3930068009               | PILOT LAMP 0.08A ASS'Y                                       |
| C047         | 2544019005               | 220µF 16V ELECTROLYTIC                                       | 1            |                          |  |
|              |                          | 107 2220711027110  |              | L                        |  |
|              |                          |  |              |                          |  |

#### For PMA-770

#### ETC-454B RECT & LCD UNIT

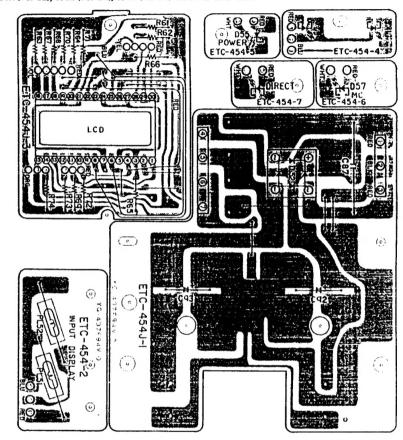


#### ETC-454B RECT & LCD UNIT PARTS LIST

| Ref.<br>No.                                  | Part No.   | Part Name & Descriptions   |                | Part No.   | Part Name & Descriptions   |  |
|--|--|--|----------------|--|--|--|
| SEMICONDUCTORS                               |  |  |                | OTHER PARTS  |  |  |
| D052<br>D053                                 | 2760233005<br>3939149000   | M4C-51 DIODE<br>BG5531K GREEN LIGHT EMITTING<br>DIODE  |                | 2220765000<br>2050087039<br>2050087042               | P.W. BOARD<br>3P TERMINAL<br>4P TERMINAL   |  |
| D054   | 3939149000<br>3939149013   | BF5531K GREEN LIGHT EMITTING   |                | 2090008162<br>2090008120<br>2090008146               | JUMPER P=20mm USED 1<br>JUMPER P=10mm USED 8   |  |
|  | 3939130006   | LCD DISPLAY  | PL051<br>PL052 | 3930060010<br>3930060010                             | PILOT LAMP (14V, 200 mA)<br>PILOT LAMP (14V, 200 mA)   |  |
|  |  | RESISTORS (not included Carbon Film ±5%, ½W Type) CAPACITORS (not included Ceramic 50V Type) |                | 2034146035<br>2034147034<br>2036082045<br>2038091047 | 3P CONNECTOR CORD FOR POWER 3P CONNECTOR CORD FOR SP 4P CONNECTOR CORD FOR LCD 5P CONNECTOR CORD FOR LCD |  |
| C088<br>C089<br>C090<br>C091<br>C092<br>C093 | 2561017019<br>2561017019<br>2561017019<br>2561017019<br>2546058006<br>2546058006 | 0.01µF ±10% 630V METALLIZED<br>0.01µF ±10% 630V METALLIZED                                   |                | 2040075051<br>4120952102<br>4730354019<br>1430231008 | BP CONNECTOR CORD FOR LCD<br>CONDENSER BRACKET<br>TAPPING SCREW (213×8<br>COLOR PLATE                    |  |

#### • For PMA-750

ETC-454K (For E2), 454K (For EK), 454M (For E1) RECT & LCD UNIT



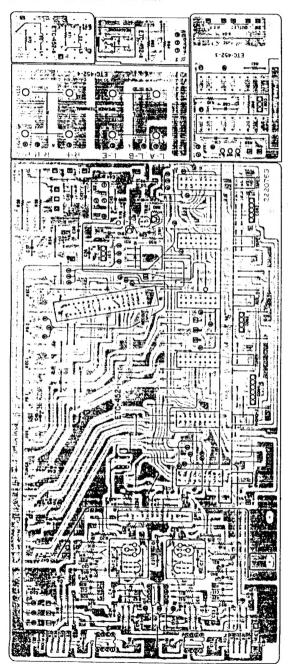
#### ETC-454K RECT & LCD UNIT PARTS LIST

| Ref.<br>No. | Part No.   | Part Name & Descriptions                       |                     |  |  |
|-------------|------------|--|---------------------|--|--|
|             |            | SEMICONDUCTOR                                  | S                   |  |  |
| D052        | 2760233005 | M4C-51   | DIODE               |  |  |
| D053        | 3939149000 | BG5531K GREEN                                  | LIGHT EMITTING      |  |  |
| D054        | 3939149000 | BG5531K GREEN                                  | LIGHT EMITTING      |  |  |
| D055        | 3939149013 | PR5531K RED                                    | LIGHT EMITTING      |  |  |
| D056        | 3939149000 | BG5531K GREEN                                  | LIGHT EMITTING      |  |  |
| D057        | 3939149000 | BG5531K GREEN                                  | LIGHT EMITTING      |  |  |
|             | 3939130006 | LCD DISPLAY                                    | DIODE               |  |  |
|             |            | RESISTORS<br>Inot included Carbo<br>CAPACITORS | n Film ±5% %W Type) |  |  |
| C087        | 2561017019 | 0.01µF ±10% 630                                | OV METALLIZED       |  |  |
| C092        | 2546063004 | 15000/15000µF 63\                              | V ELECTROLYTIC      |  |  |
| C093        | 2546063004 | 15000/15000µF 631                              | V ELECTROLYTIC      |  |  |

| Ref.<br>No. | Part No.    | Part Name & Descriptions    |  |  |
|-------------|-------------|-----------------------------|--|--|
|             | OTHER PARTS |                             |  |  |
|             | 2220765000  | P.W. BOARD                  |  |  |
|             | 2050087039  | JP TERMINAL                 |  |  |
|             | 2050087042  | 4P TERMINAL                 |  |  |
|             | 2090008133  | JUMPER P=7.5mm USED 1       |  |  |
|             | 2090008120  | JUMPER P=10mm USED 9        |  |  |
|             | 2090008162  | JUMPER P=20mm USED 1        |  |  |
| PL051       | 3930060010  | PILOT LAMP (14 V, 200 mA)   |  |  |
| PL052       | 3930060010  | PILOT LAMP (14 V, 200 mA)   |  |  |
|             | 2034146035  | 3P CONNECTOR CORD FOR POWER |  |  |
|             | 2034147034  | 3P CONNECTOR CORD FOR SP    |  |  |
|             | 2034146006  | 3P CONNECTOR CORD (USED 2)  |  |  |
|             |             | FOR TONE MC                 |  |  |
|             | 4120952102  | CONDENSER BRACKET           |  |  |
|             | 4730354019  | TAPPING SCREW 12)3x8        |  |  |
|             | 1430231008  | COLOR PLATE                 |  |  |
|             |             |                             |  |  |
|             |             |                             |  |  |
|             |             |                             |  |  |
|             |             |                             |  |  |

#### • For PMA-770

ETC-4528 (For E2), 452D (For E1) INPUT & EQ. UNIT

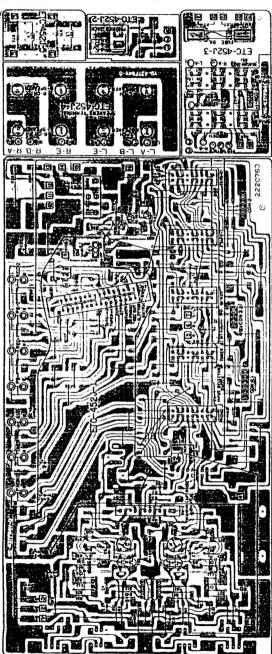


#### ETC-452B INPUT & EQ. UNIT PARTS LIST

| Ref.<br>No.  | Part No.   | Part Name & Descriptions   | Ref.<br>No. | Part No.   | Part Name & Descriptions   |
|--|--|--|-------------|--|--|
|  | ~  | SEMICONDUCTORS   | C021        | 2554169000   | 0.01µF ±5% 50V PLASTIC FILM  |
| IC001  | 2650034013   | NJM4559D INTEGRATED CIRCUIT  | C022        | 2554169000   | 0.01µF ±5% 50V PLASTIC FILM  |
|  | 2630133002   |  | C023        | 2554161008   | 0.0047µF ±5% 50V PLASTIC FILM  |
|  | 2630133002   |  | C024        | 2554161008   | 0.0047µF ±5% 50V PLASTIC FILM  |
|  | 2630155006   |  | C025        | 2554164005   | 0.0062µF ±5% 50V PLASTIC FILM  |
|  | 2750029025   | PC78M15 INTEGRATED CIRCUIT   | C026        | 2554164005   | 0.0062µF ±5% 50V PLASTIC FILM  |
| INOUI  | 2750029025   | 2SK240(BL)/(V) FIELD EFFECT  | C031        | 2539015001   | 0.1µF ±20% 25V CERAMIC   |
| *****  | 2750029025   | TRANSISTOR   | C032        | 2539015001   | 0.1µF ±20% 25V CERAMIC   |
| 111002   | 2750029025   | 2SK240(BL)/(V) FIELD EFFECT  | C036        | 2544019005   | 220µF 16V ELECTROLYTIC   |
| TEO02  | 2750020025   | TRANSISTOR   | C037        | 2544079029   | 1000µF 25V ELECTROLYTIC  |
| HUUS   | 2750029025   | 2SK240(BL)/(V) FIELD EFFECT  | C038        | 2544041002   | 470uF 35V ELECTROLYTIC   |
|  |  | TRANSISTOR   | C039        | 2521018003   | 22pF ±5% 50V MICA FILM   |
| TR004  | 2750029025   | 2SK240(BL)/(V) FIELD EFFECT  | C040        | 2544039001   | 220µF 35V ELECTROLYTIC   |
|  | 074040000  | TRANSISTOR   | C041        | 2554084020   | 0.068#F ±5% 100V PLASTIC FILM  |
|  | 2710102005   | 2SA1015(Y) THANSISTOR  | C042        | 2554084020   | 0.068µF ±5% 100V PLASTIC FILM  |
|  |  | 2SA966(Y) TRANSISTOR   | C043        | 2554084020   | 0.068µF ±5% 100V PLASTIC FILM  |
| INUIZ  | 2750018010   | 2SK30A(O) FIELD EFFECT   | C044        | 2554084020   | 0.068#F ±5% 100V PLASTIC FILM  |
| 1000   | 7760040000   | TRANSISTOR   | C045        | 2544043000   | 0.474F 50V ELECTROLYTIC  |
|  | 2760049008   | 1S2076 DIODE   | C046        | 2544043000   | 0.47µF 50V ELECTROLYTIC  |
| D003   | 2760239009<br>2760237001   | S1RBA20F DIODE   | C047        | 2544043000   | 0.47µF 50V ELECTROLYTIC  |
| 0003   | 2760237001   | RV06 DIODE   | C048        | 2544043000   | 0.47uF 50V ELECTROLYTIC  |
|  |  | RESISTORS  | C049        | 2544043000   | 0.47µF 50V ELECTROLYTIC  |
|  |  | (not included Carbon film ±5% %W Type)   | C050        | 2531024003   | 0.01µF +80,20% 50V CERAMIC   |
| FI021  | 2412018002   | 3.9 k ohm ±2% ¼W CARBON FILM   | C051        | 2551121067   | 0.022#F ±5% 50V PLASTIC FILM   |
| R022   | 2412018002   | 3.9 k ohm ±2% %W CARBON FILM   | C052        | 2551121067   | 0.022µF ±5% 50V PLASTIC FILM   |
| R025   | 2412032091   | 47 k ohm ±2% ¼W CARBON FILM  |             | 2001121001   |  |
| R026   | 2412032091   | 47 k ohm 12% %W CARBON FILM  |             |  | OTHER PARTS  |
| R054   | 2440020020   | 18 ohm ±5% 1W METAL OXIDE FILM   |             | 2220763109   | P.W. BOARD   |
| R058   | 2440136024   | 39 ohm ±5% 3.15W METAL OXIDE   | 1           | 2050134908   | TERMINAL PIN USED 22   |
|  |  | FILM   |             | 2090047903   | JUMPER WIRE USED 81  |
| R059   | 2440136024   | 39 ohm ±5% 3.15W METAL OXIDE   |             | EP-5667H1  | TERMINAL USED 2  |
|  |  | FILM   | 1           | 2090008133   | JUMPER P=7.5mm USED 5  |
| R063   | 2440087021   | 120 ohm ±5% 2W METAL OXIDE FILM  | 1           | 2090008120   | JUMPER P=10mm USED 1   |
| R064   | 2440087021   | 120 ohm ±5% 2W METAL OXIDE FILM  | 1           | 2090008117   | JUMPER P=12.5mm USEO 9   |
| R069   | 2440017020   | 10 ohm ±5% 1W METAL OXIDE FILM   | 1           | 2090008146   | JUMPER P≈5mm USED 3  |
| R070   | 2440017020   | 10 ohm ±5% 1W METAL OXIDE FILM   | 1           | FEP-1261   | JUMPER WIRE USED 3   |
| R080   | 2442012023   | 4.7 ohm ±5% %W METAL OXIDE FILM  |             | 2116014030   | SEMI FIXED RESISTOR 100 k ohm  |
|  |  |  | VR002       |  | SEMI FIXED RESISTOR 100 k ohm  |
|  |  | CAPACITORS   | LR001       | 2140020003   | READ RELAY L23(M)  |
|  |  | (not included Ceramic 50 V Type)   |             | 4140116106   | SHIELD COVER USED 2  |
| C001   | 2554123004   | 120pF ±5% 50V PLASTIC FILM   | L003        | 2320017001   | INDUCTOR   |
| C002   | 2554123004   | 120pF ±5% 50V PLASTIC FILM   | L004        | 2320017001   | INDUCTOR   |
|  | 2554145008   | 0.001µF ±5% 50V PLASTIC FILM   | 1           | 4170043100   | RADIATOR   |
| C004   | 2554145008   | 0.001 F ±5% 50V PLASTIC FILM   |             | 4730354019   | TAPPING SCREW (2)3×8   |
| C005   | 2544011003   | 220µF 10V ELECTROLYTIC   | SW001       |  | 6P PUSH SWITCH INPUT SELECTOR  |
|  | 2544011003   | 220µF 10V ELECTROLYTIC   |             | 2124330007   | SLIDE SWITCH (4-2) REMOTE CARTRIDG   |
| C007   | 2541035008   | 1µF ±20% 35V ELECTROLYTIC  | SW003       |  | SLIDE SWITCH (4-6) REMOTE RECOUT   |
|  | 2541035008   | 1µF ±20% 35V ELECTROLYTIC  | SW004       |  | 2P PUSH SWITCH S.P. SWITCH   |
| C008   | 2554145008   | 0.001µF ±5% 50V PLASTIC FILM   | 1           | 2048047007   | HEADPHONE JACK   |
| C008   |  |  | 1           | 2050144008   | 8P TERMINAL FOR SP   |
| C008<br>C009<br>C010   | 2554145008   | 0.001µF ±5% 50V PLASTIC FILM   |             |  |  |
| C008<br>C009<br>C010<br>C011                                 |  | 0.001µF ±5% 50V PLASTIC FILM<br>0.068µF ±2% 50V PLASTIC FILM   | 1           | 2035622008   | 3P CONNECTOR BASE FOR SP LED   |
| C008<br>C009<br>C010<br>C011<br>C012                         | 2554145008   |  |             | 2035622024   | 4P MINI CON. PIN FOR LCD   |
| C008<br>C009<br>C010<br>C011<br>C012<br>C013                 | 2554145008<br>2554085032   | 0.068#F ±2% 50V PLASTIC FILM<br>0.068#F ±2% 50V PLASTIC FILM   |             | 2035622024<br>2035622066                             | 4P MINI CON. PIN FOR LCD<br>5P MINI CON. PIN FOR LCD   |
| C008<br>C009<br>C010<br>C011<br>C012<br>C013<br>C014         | 2554145008<br>2554085032<br>2554085032<br>2554085016<br>2554085016 | 0.068µF ±2% 50V PLASTIC FILM<br>0.068µF ±2% 50V PLASTIC FILM   |             | 2035622024<br>2035622066<br>2035622082               | 4P MINI CON. PIN FOR LCD<br>5P MINI CON. PIN FOR LCD<br>6P CONNECTOR BASE FOR LCD                                |
| C008<br>C009<br>C010<br>C011<br>C012<br>C013<br>C014<br>C017 | 2554145008<br>2554085032<br>2554085032<br>2554085016               | 0.068µF ±2% 50V PLASTIC FILM<br>0.068µF ±2% 50V PLASTIC FILM<br>0.018µF ±2% 50V PLASTIC FILM                                 |             | 2035622024<br>2035622066<br>2035622082<br>2050145007 | 4P MINI CON. PIN FOR LCD<br>5P MINI CON. PIN FOR LCD<br>6P CONNECTOR BASE FOR LCD<br>4P CONNECTOR BASE FOR PHONO |
| C008<br>C009<br>C010<br>C011<br>C012<br>C013<br>C014<br>C017 | 2554145008<br>2554085032<br>2554085032<br>2554085016<br>2554085016 | 0.068µF ±2% 50V PLASTIC FILM<br>0.068µF ±2% 50V PLASTIC FILM<br>0.018µF ±2% 50V PLASTIC FILM<br>0.018µF ±2% 50V PLASTIC FILM |             | 2035622024<br>2035622066<br>2035622082               | 4P MINI CON. PIN FOR LCD<br>5P MINI CON. PIN FOR LCD<br>6P CONNECTOR BASE FOR LCD                                |

#### • For PMA-750

ETC-452K (For E2, EK), 452M (For E1) INPUT & EQ. UNIT



#### ETC-452K INPUT & EQ. UNIT PARTS LIST

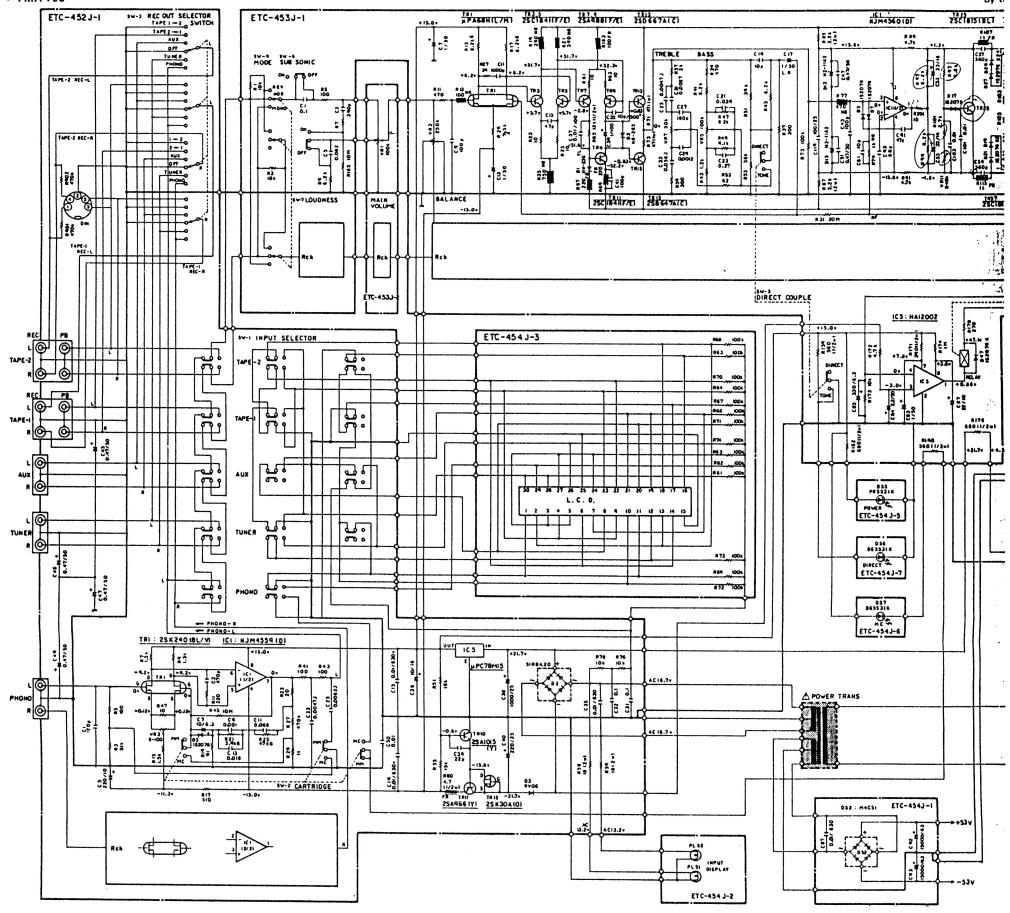
| Ref.   | Part No.   | Part Name & Descriptions  |   | Ref.<br>No.  | Part No.   | Part Name & Descriptions   |
|--|--|---|---|--|--|--|
| SEMICONDUCTORS   |  |   | C025  | 2554164005   | 0.0062µF ±5% 50V PLASTIC FILM  |  |
|  | 2650034013<br>2630155006<br>2750029025<br>2750029025   | NJM4559D<br>μPC78M15<br>2SK240(BL)/(V)<br>2SK240(BL)/(V)  | INTEGRATED CIRCUIT<br>INTEGRATED CIRCUIT<br>FIELD EFFECT<br>TRANSISTOR<br>FIELD EFFECT<br>TRANSISTOR  | C026<br>C031<br>C032<br>C035<br>C036<br>C037         | 2554164005<br>2539015001<br>2539015001<br>2561017019<br>2544132005<br>2544079029   | 0.0062µF 15% 50V PLASTIC FILM 0.1µF 120% 25V CERAMIC 0.1µF 120% 25V CERAMIC 0.01µF 10% 630V METALLIZED 10µF 16V ELECTROLYTIC 1000µF 25V ELECTROLYTIC 25V ELECTROLYTIC  |
| TR011  | 2710102005<br>2710105002<br>2750018010<br>2760239009<br>2760237001<br>2760049008   | 2SA1015(Y)<br>2SA966(Y)<br>2SK30A(O)<br>S1RBA20F<br>RV06<br>152076  | TRANSISTOR TRANSISTOR FIELD EFFECT TRANSISTOR DIODE DIODE DIODE DIODE   | C040<br>C045<br>C046<br>C047<br>C049<br>C051<br>C052 | 2544039001<br>2544145005<br>2544145005<br>2544145005<br>2544145005<br>2561121067<br>2551121067   | 220µF   35V ELECTROLYTIC   |
| D006   | 2760049008   | 152076  | DIODE   | OTHER PARTS  |  |  |
| R021<br>R022<br>R025<br>R026<br>R046<br>R046<br>R059<br>R063<br>R064<br>R069<br>R070<br>R080 | 2412018002<br>2412018002<br>2412032091<br>2412032091<br>2412033003<br>2420203003<br>2440077028<br>2440077028<br>2440029021<br>2440029021<br>2440017020<br>2440017020<br>2440017020 | 3.9 k ohm 12% %W 47 k ohm 12% %W 47 k ohm 12% %W 47 k ohm 12% %W 10 M ohm 10% %W 18 ohm 15% 2W 18 ohm 15% 2W 100 ohm 15% 1W 100 ohm 15% 2W 10 | CARBON FILM<br>CARBON FILM  | VR002<br>L003<br>L004<br>SW001<br>SW002              | 2220763109 P.W. BOARD 2050134908 TERMINAL PIN USED 21 2090047903 EP-5667H1 2090008146 2090008146 2090008147 JUMPER P-5mm USED 4 209000817 JUMPER P-10mm USED 1 209000817 JUMPER P-10mm USED 1 209000819 JUMPER P-10mm USED 1 209000819 JUMPER P-17.5mm USED 2 209000819 JUMPER P-17.5mm USED 1 50000819 JUMPER P-17.5mm USED 1 50000819 JUMPER P-18.5mm USED 7 JUMPER P-18.5mm USED 6 JUMPER P-18.5mm USED 7 JUMPER P-18.5mm USE |  |
| CAPACITORS<br>(not included Ceramic 50V Type)  |  |   |   | SW003<br>SW004                                       | 2124331006<br>2124327007   | SLIDE SWITCH (4-6) REMOTE RECOUT<br>2P PUSH SWITCH S.P.SW.   |
| C005<br>C006<br>C007<br>C008<br>C009<br>C010<br>C011<br>C012<br>C013<br>C014<br>C023<br>C024 | 2544131006<br>2544103001<br>2541003001<br>2541003001<br>2554145008<br>2554145008<br>2554189006<br>2554175007<br>2554175007<br>2551120084   | 220µF 10\\ 10µF ±20%6.3\\ 10µF ±20%6.3\\ 0.001µF ±5% 50\\ 0.001µF ±5% 50\\ 0.068µF ±5% 50\\ 0.018µF ±5% 50\\ 0.018µF ±5% 50\\ 0.018µF ±5% 50\\ 0.018µF ±5% 50\\ 0.0047µF ±5% 50\\ 0.0047µF ±5% 50\\ 0.0047µF ±5% 50\\ 0.0047µF ±5% 50\\   | / ELECTROLYTIC / ELECTROLYTIC / ELECTROLYTIC / ELECTROLYTIC / ELECTROLYTIC / PLASTIC FILM |  | 2048047007<br>2050144008<br>2035622008<br>2050136029<br>2050136032<br>2050136045<br>2036084001<br>2040079002<br>4140240001<br>FEP1261  | 2035622008 3P CONNECTOR BASE FOR SP LED 2050136029 4P CONNECTOR BASE FOR LCD 2050136045 6P CONNECTOR BASE FOR LCD 2036084001 4P CONNECTOR BASE FOR LCD 2040079002 6P CONNECTOR BASE FOR PLON TAPE 4140240001 EARTH PLATE |

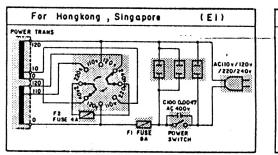
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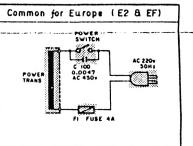
# WIRING DIAGRAM

PMA-750

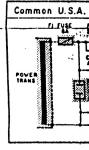
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varies as shown in the figure below.



# NOTES:

All resistance values in ohm, K=1,000 ohm, M = 1,000,000 ohm.

All capacitance values in microfarad, P=micromicro farad.

Every voltages and currents is measured at no signal input condition.

Circuit and parts are subject to change without prior notice.

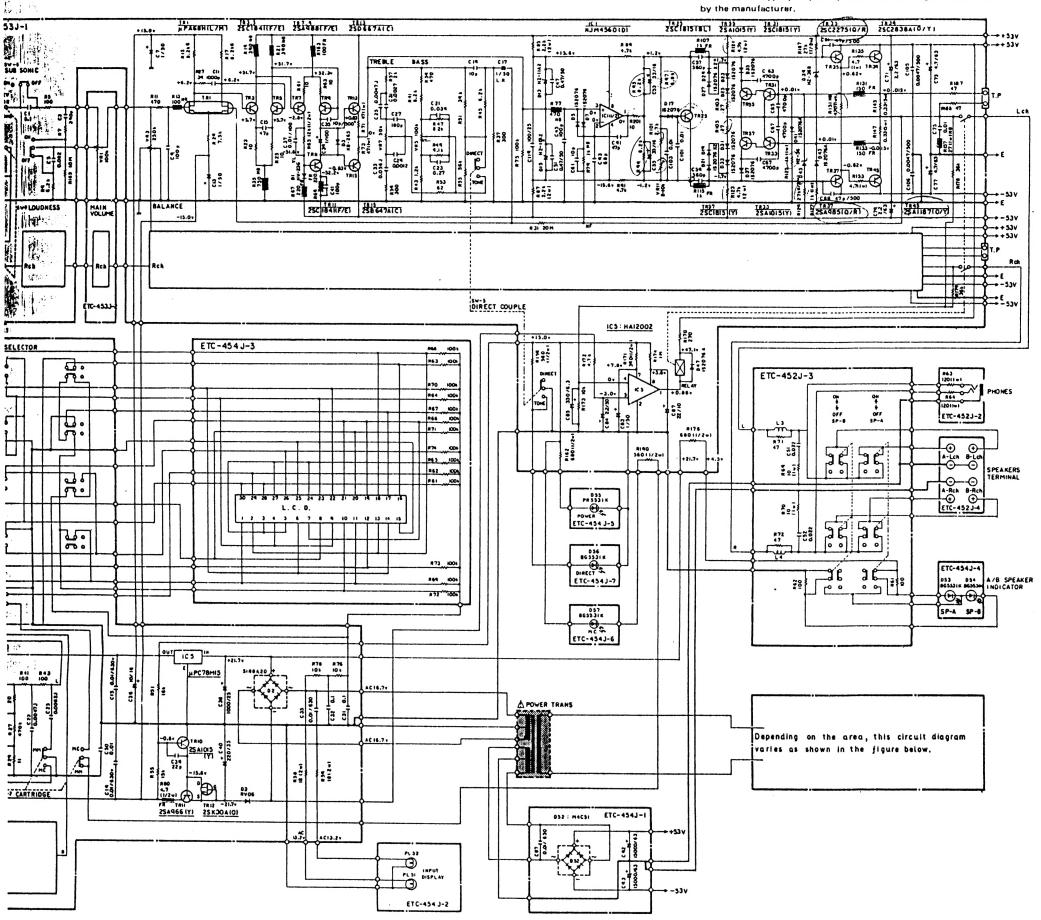
All voltage va Depending on the area, this circuit diagram

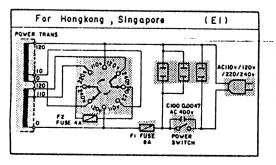
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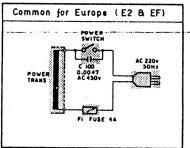
negative (-)p Checking of th and negative

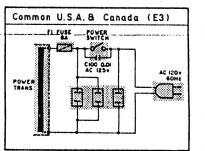
This schematic without notice

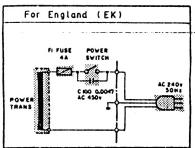
Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification











# NOTES:

All resistance values in ohm , K=1,000 ohm ,

M\*1,000,000 ohm.
All capacitance values in microfarad, P\*micro-

input condition.

micro farad.

Every voltages and currents is measured at no signal

Circuit and parts are subject to change without prior notice.

Depending on the area, this circuit diagram varies as shown in the figure below.

1

# NOTE:

All voltage values in \_\_\_\_ are measured between the specified points and negative (-) polarity power supply source.

Checking of the value in \_\_\_\_ must be measured between the specified point

checking of the value in \_\_\_\_\_ j must be measured between the specified point and negative (-) polarity power supply source, or damage may invite to the unit.

This schematic diagram is standard and subject to change for improvement without notice